

STUDIES IN *STYLIDIUM* FROM WESTERN AUSTRALIA: NEW TAXA;
REDISCOVERIES AND RANGE EXTENSIONS

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ABSTRACT

Seven new species and two new subspecies of *Stylidium* from Western Australia are described and compared to their nearest relatives. These are known only from the type localities except for *S. albolilacinum* *spec. nov.* Localities are given for recent collections of species not collected to any appreciable extent since their type collections; these reports inevitably involve range extensions. *Stylidium exoglossum* Erickson & Willis proves to be a synonym of *S. pygmaeum* R. Br.

KEY WORDS: *Stylidium*, Stylidiaceae, taxonomy, Australia

NEW SPECIES AND SUBSPECIES

As with our earlier paper (Carlquist & Lowrie 1989), we are presenting Latin diagnoses in the style of Mildbraed (1907). The new species are presented first, then the subspecies. The species are presented in alphabetical order rather than organized in terms of currently recognized sections. As the family becomes better known, at least some of the currently recognized sections are likely to be modified. Because the new species are compared to currently known species judged to be most closely related to them, the new species may be easily placed in the sections recognized by Mildbraed (1907).

Stylidium albolilacinum A. Lowrie & S. Carlquist, *stat. nov.* BASIONYM:
Stylidium diuroides Lindl. var. *albolilacinum* Erickson & Willis, Victorian
Nat. 83:110-111. 1966.

Herba perennis, caudice semi caulescente. Folia radicalia filiformis, dense glandulosa obtusiuscula, 1.5-3.5 cm, plerumque 2.5 cm longa. Scapi 20-38 cm, plerumque 30 cm alti, glanduloso-pubescenti, verticilli 2, foliorum radicalibus simili sed microrum. Racemi laxi et satis elongati, bracteae ut prophyllae anguste lineares. Calycis sparse glandulosi. Calycis lobi lineares subacuti quam tubus longiores. Corollae tubus brevis, laciniae ovato-oblongae, albae, extus albae et violaceae. Appendices faucis oblongae 6, apice manifeste breviter pubescentes, labellum ovato-lanceolatum, exappendiculatum, arcuatum. Capsula ovoidea, 3 mm longa.

Perennial herb, forming perceptible stems at base. Leaves of the rosette linear, densely glandular and minutely obtuse, 1.5 to 3.5 cm long, mostly about 2.5 cm long. Inflorescences 20-38 cm, mostly about 30 cm tall, glandular pubescent, lax and rather elongate, verticils of bracts 2, bracts like the rosette leaves but smaller. Calyx tube (ovary) sparsely glandular. Calyx lobes linear, subacute, a little shorter than the calyx tube. Corolla tube short, corolla lobes ovate-oblong, white to violet on outer surfaces. Throat appendages 6, oblong, with tips perceptibly short-pubescent. Labellum ovate-lanceolate, without appendages, arcuate to one side. Capsule ovoid, 3 mm long.

Stylidium albolilacinum (Fig. 1) is recognized here at the specific level; it was described as *S. diuroides* Lindl. var. *albo-lilacinum* by Erickson & Willis (1966). That it is genetically separated from *S. diuroides* is suggested by the occurrence of nearby populations of the two: at one locality (Great Northern Highway, 2 km northeast of Wandena Road [North End], Muchea, Western Australia, October 7, 1989, *Allen Lowrie 241*: PERTH, RSA), *S. albolilacinum* was found in white sand only 10 meters away from a laterite rise on which *S. diuroides* subsp. *diuroides* was growing. In addition to the difference in soil preference, *S. albolilacinum* differs from *S. diuroides* by having shorter leaves that are more densely glandular; slightly taller racemes; and corolla color (lobes white and pale violet outside with faint purple lines).

Stylidium carlquistii A. Lowrie, *spec. nov.* HOLOTYPE: In a laterite and sand soil on margins of a gravel mine, ca. 4 km east of the Brand Highway, the first gravel pit on the south side of Wannamal West Road, about 22 km north of Gingin, Western Australia, 5 October 1990, *Allen Lowrie 104* (PERTH). Isotype: RSA.

Perennis caudice caespitoso, vel suffrutex, 8-20 cm altus, erectus. Folia dense rosulata vel sparsa, linearia, 1.5-2.5 cm plerumque 2 cm longa, 1-2 mm lata, apice semper acuta, infra carinata, recta vel arcuata, non mucronata, glabra, marginibus subrecurvis vel subtus bisulculata, glabra, nonglauca. Folia stolonis breviora. Scapi 20-35 cm alti, glanduloso-pubescentes, verticilli paucibracteati

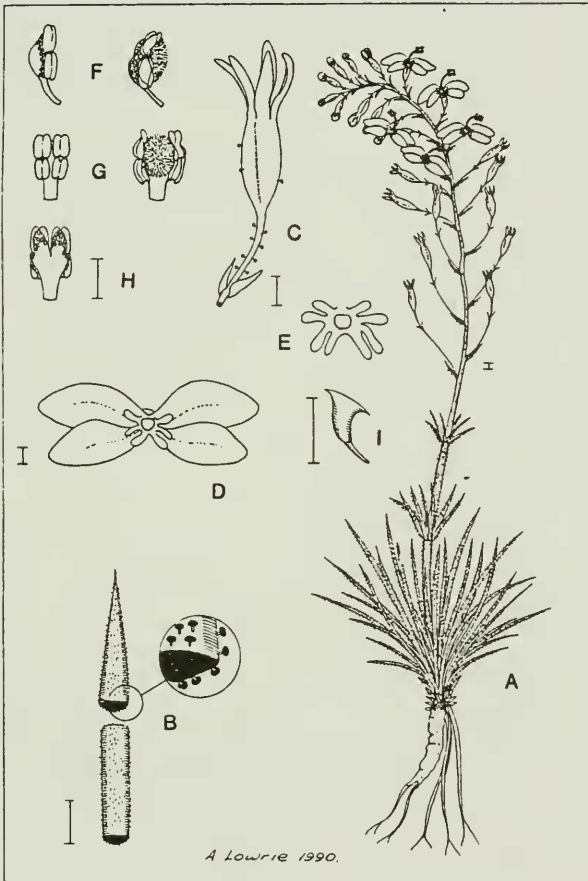


Figure 1. *Stylidium albolilacinum*. A. Habit of plant. B. Leaf, with enlarged portion. C. Pedicel, ovary, and calyx lobes. D. Face view of corolla. E. Throat of corolla, enlarged, to show appendages. F. Lateral view of column tip (with stigma grown out, right). G. Face view of column tip (with stigma grown out, right). H. Back of column tip. I. Labellum. Scale = 1 mm.

instructi, bracteae lineares, patentes. Flores in paniculam laxam anguste pyramidalam dispositi. Calycis glanduloso-pubescentis, 1.5 mm longi, lobi obtusi, 2.5-3.0 mm longi, glandulosi. Corolla roseam lacinae subaequales, 8 mm longae, ellipticae vel obovatae, crenatae. Appendices faucis 6, aequales, apice capitulum flavum. Labellum lanceolatum, longe acuminatum. Capsula ovoidea-globosa, 3 mm longa.

Caespitose perennial or a subshrub from 8-20 cm tall (excluding inflorescence). Leaves densely rosetted but also more sparsely scattered on elongate stems, 1.5-3.5 cm but mostly about 2 cm long, 1-2 mm wide, apex acute, carinate below, straight or arcuate, not mucronate, margins recurved (lower side two furrowed) in dried specimens, leaves glabrous and not glaucous. Leaves on elongate stems shorter than those in rosettes. Inflorescences 20-35 cm tall, glandular pubescent, each provided with a verticil of a few spreading bracts below the flowers. Flowers in a lax pyramidal panicle. Ovary glandular pubescent, 1.5 mm long at anthesis, calyx lobes obtuse, 2.5-3.0 mm long, glandular pubescent. Corolla pink, lobes almost equal, 8 mm long, elliptic to obovate, crenate. Throat appendages 6, capitate, tips yellow. Labellum lanceolate, long acuminate. Capsule ovoid-globose, 3 mm long.

Stylidium carlquistii (Fig. 2) can readily be placed in the group of species that includes *S. amoenum* R. Br., *S. brunonianum* Benth., *S. lowrieianum* Carlquist, *S. maillandianum* E. Pritzel, and *S. striatum* Lindl. These species have one or more verticils of bracts on the inflorescence and rose-purple flowers with six prominent capitate throat appendages as well as other features that ally species of this group. Within the species group, *S. carlquistii* differs from *S. amoenum* by its distinctive narrow leaves and its branched stems that produce a suffrutescent habit. This habit is unique within the group of species cited above, none of which have elongate stems except for *S. carlquistii*. Unlike the leaves of *S. brunonianum*, *S. lowrieianum*, and *S. striatum*, leaves of *S. carlquistii* are very narrow, not glaucous, and have recurved margins in dried specimens. The single verticil of bracts in *S. carlquistii* is distinctive; a second may occur at the first node in the inflorescence in a few specimens. The inflorescence of *S. carlquistii* is distinctive in being branched and therefore paniculate, whereas the other species of the group have simple racemes.

Stylidium coatesianum A. Lowrie & S. Carlquist, *spec. nov.* HOLOTYPE: In laterite soil on top of mesa east of the old homestead in the Tutanning Reserve east of Pingelly, Western Australia, 7 November 1989, *Allen Lowrie 242*. Isotype: RSA.

Perennis caudice caespitoso. Folia radicalia rosulata supra subtusque dense et breviter nonglanduloso-pubescentia, oblanceolata-lineata, incurvata, coriacea, 1.0-3.5 cm plerumque 3 cm longa,

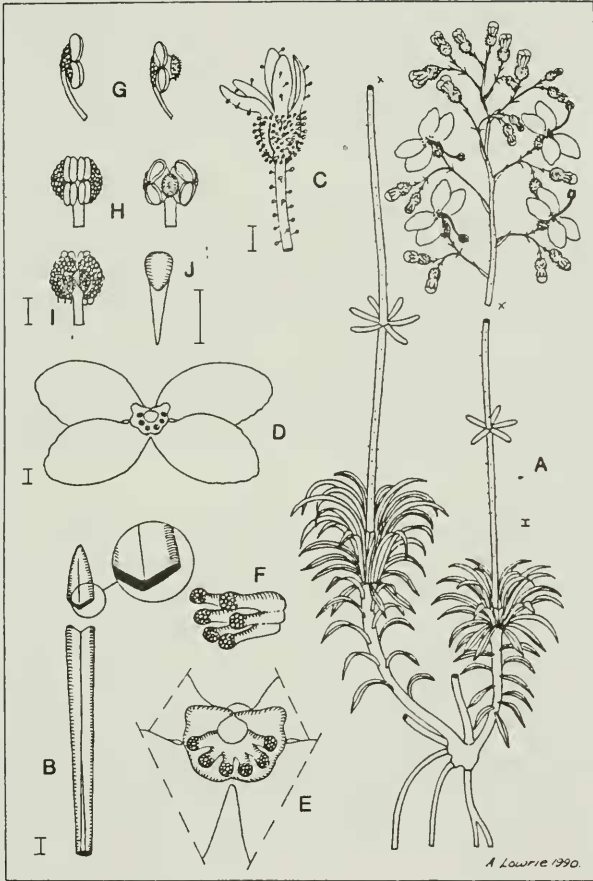


Figure 2. *Stylidium carlquistii*. A. Habit of plant. B. Leaf, with enlarged portion. C. Pedicel, ovary, and calyx lobes. D. Face view of corolla. E. Throat of corolla. F. Throat appendages, enlarged. G. Lateral view of column tip (with stigma grown out, right). H. Face view of column tip (with stigma grown out, right). I, Back of column tip. J. Labellum. Scale = 1 mm.

2 mm lata. Scapi parte inferiore glabra, parte superiore sparse glanduloso-pubescentes, flores in racemum dispositi. Pedicelli breve glanduloso-pubescentes, bracteae scarioso-marginatae. Calycis glaberrimi, tubus ovatus, 2.5 mm longus, lobis obtusis, scarioso-marginatis, subaequilongus. Corollae flavae, lacinae oblongae, rotundatae, 3.0-3.5 mm longae; faucis appendices 4 laciniatae, brunneo-capitatae et 3 rotundatae, nitidae. Labellum lanceolatum, curvatum. Capsula et semina ignota.

Caespitose perennial. Leaves in a basal rosette, covered densely with nonglandular hairs on both surfaces, oblanceolate-linear, margins incurved, texture coriaceous, 1.0-3.5 cm and mostly 3 cm long, 2 mm wide. Inflorescences glabrous below, upper portions sparsely glandular pubescent, flowers in a raceme. Pedicels with short glandular hairs, bracts with scarios margins. Ovary glabrous, ovate, 2.5 mm long, calyx lobes obovate, obtuse, scarios margined, about as long as the ovary or a little shorter. Corollas yellow, corolla lobes oblong, tips rounded, lobes 3.0-3.5 mm long. Throat appendages 4, laciniate, with brown capitate tips, alternating with an additional 3 throat appendages which are rounded and shining. Labellum lanceolate and curved to one side. Capsule and seeds unknown.

Stylidium coatesianum (Fig. 3) can be referred to what has been called "the *S. spathulatum* R. Br. complex" (Carlquist 1966). This complex includes, in addition to typical *S. spathulatum*, *S. spathulatum* subsp. *acuminatum* Carlquist, *S. spathulatum* subsp. *glandulosum* (Mildbraed) Carlquist and *S. lineatum* Sond. In addition to these latter two subspecies, we can recognize *S. coatesianum* and the species described below, *S. cymiferum*, at the specific level because these two species have a series of distinctive morphological features the sum of which are just as distinctive for these species, respectively, as for any given species in the genus. However, various other populations in the *S. spathulatum* complex have a series of distinctive characteristics, although not as striking as those of the named taxa in this complex. Further study of the *S. spathulatum* complex by methods such as those used by Farrell & James (1979) may show that some of these populations are reproductively isolated from each other. If there is reproductive isolation among populations that also have some consistent suites of morphological features that permit them to be distinguished, one could easily name other species or subspecies in the *S. spathulatum* complex. This complex represents an excellent group for further biosystematic studies. This complex is characterized by the presence of glandular hairs on inflorescences and (in taxa other than *S. coatesianum*) leaves, yellow flowers, and throat appendages which are basically composed of four pairs of short dentate appendages alternating with three rounded, shining appendages. Populations differ with respect to expression of these appendages. In *S. coatesianum*, the dentate appendages have subdivided tips, and are here

termed laciniate. Study of the throat appendages has revealed numerous distinctive variations (Lowrie, unpublished) which should be taken into account in further studies. In addition to the lacinate throat appendages and presence of dense nonglandular trichomes on leaves, *S. coatesianum* is distinctive on the basis of leaf shape. It is the only taxon in the *S. spathulatum* complex in which leaves are linear-oblongate with obtuse tips, and it is the only taxon in the complex in which leaves have upwardly curved margins. In addition, *S. coatesianum* is unique within the complex in the obovate shape and hyaline margins of its calyx lobes.

Stylidium cymiferum A. Lowrie & S. Carlquist, *spec. nov.* HOLOTYPE:

In loam and laterite soils of open wandoo forest on the north side of the Calingiri-Wongan Hills road, 3.9 km east of the Great Northern Highway, Western Australia, 27 October 1990, *Allen Lowrie 139* (PERTH).
Isotype: RSA.

Perennis caudice caespitoso, ramosa. Folia radicalia rosulata, supra subtusque breviter glanduloso-pubescentes, oblanceolata, apice acuta, petiolata, chartacea, supra olivacea et subtus pallide, folia sicca brunnea, petiolo incluso circa 1 cm longa, 2-3 mm lata. Scapi glabri, 14-26 cm alti, paniculati. Pedicelli 5 mm longi, prophyllis minimis instructi, sparse glandulosi. Calycis glaberrimi, tubus angustus, lobis ellipticis acutis subaequilongus. Corolla flava, lacinae ovatae, 4.0-4.5 mm longae, 3.5-4.0 mm latae. Faucis appendices 8, breve dentiformis, geminatis, et 3 globiformes. Labellum exappendiculatum et acuminatum. Capsula et semina ignota.

Caespitose perennial with branched stem. Leaves basal and rosetted, with short glandular hairs both above and below, apex acute, petiolate, chartaceous, olive green above and paler below, brownish when dried, about 1 cm long (petiole included) and 2-3 mm wide. Inflorescences glabrous, 14-26 cm tall, paniculate. Pedicels 5 mm long, provided with minimal bracteoles, sparsely glandular. Ovaries glabrous and slender, almost equal in length to the elliptic acute calyx lobes. Corolla yellow, corolla lobes ovate, 4.0-4.5 mm long, 3.5-4.0 mm wide. Throat appendage 8 dentiform in pairs, and 3 globose. Labellum without appendages, acuminate. Capsule and seeds unknown.

Stylidium cymiferum (Fig. 4) is a member of the *S. spathulatum* complex discussed above in connection with the preceding species. Within this complex, *S. cymiferum* is distinctive in its branched inflorescences, the lower portions of which are composed of cymose units noted in the species name. Also distinctive are the very short oblanceolate leaves in dense, closely grouped rosettes. The calyx lobes are elliptical and acute, and do not quite match those of other taxa in the complex. The throat appendages of *S. cymiferum* are much like those figured for *S. lineatum* by Erickson (1958).

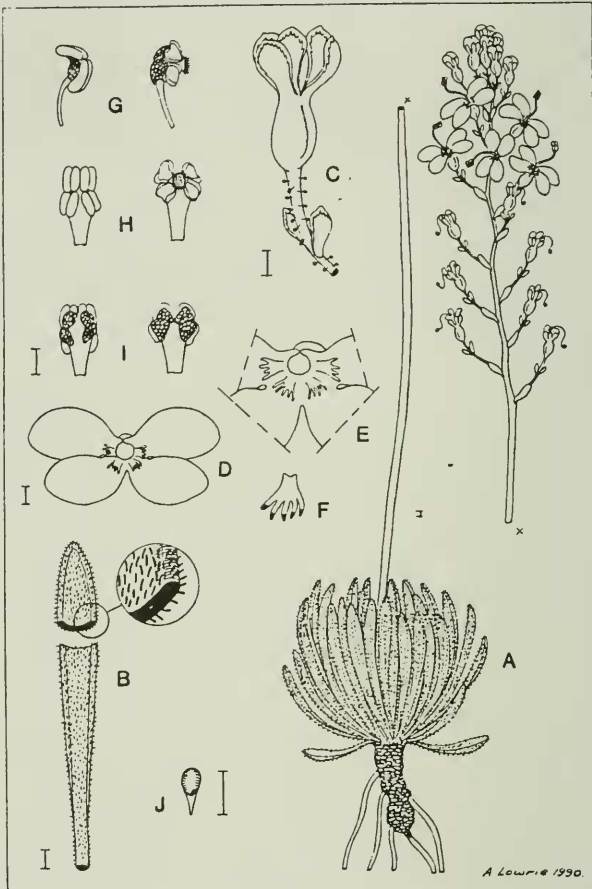


Figure 3. *Styliidium coatesianum*. A. Habit of plant. B. Leaf, with enlarged portion. C. Pedicel, ovary, and calyx lobes. D. Face view of corolla. E. Throat of corolla. F. Throat appendage, enlarged. G. Lateral view of column tip (with stigma grown out, right). H. Face view of column tip (with stigma grown out, right). I. Back of column tip (at stigmatic stage, right). J. Labellum. Scale = 1 mm.

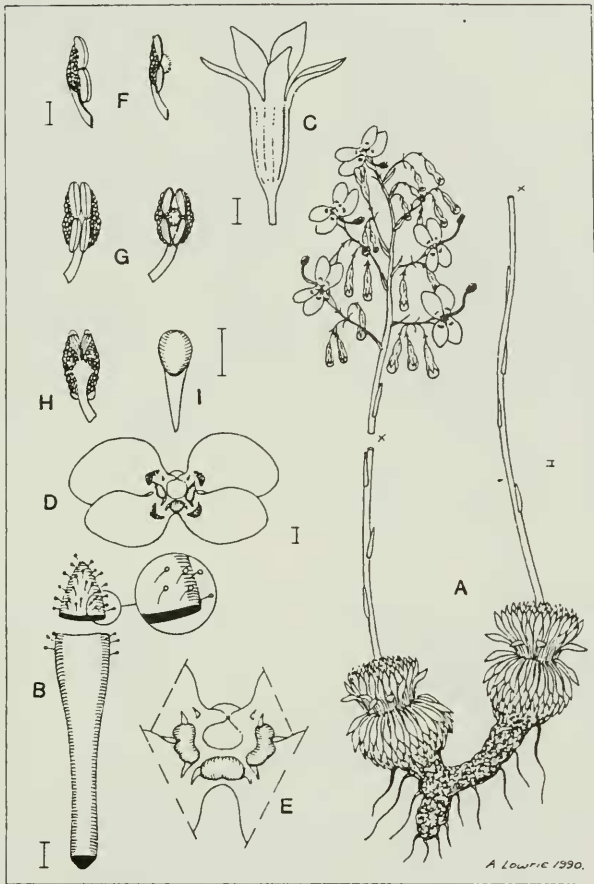


Figure 4. *Stylidium cymiferum*. A. Habit of plant. B. Leaf, with enlarged portion. C. Ovary and calyx lobes. D. Face view of corolla. E. Throat of corolla, to show appendages. F. Lateral view of column tip (with stigma grown out, right). G. Face view of column tip (with stigma grown out, right). H. Back of column tip. I. Labellum. Scale = 1 mm.

Stylidium drummondianum A. Lowrie & S. Carlquist, *spec. nov.* HOLOTYPE: In gravelly laterite soils under *Dryandra hewardiana* and *Casuarina helmsii* 10.6 km northwest of Three Springs on The Midlands Road, Western Australia, 22 September 1990, *Allen Lowrie 103* (PERTH). Isotype: RSA.

Perennis manifeste nodoso-congestia, ramosis. Folia omnia radicalia anguste linearia, apice incurvato-setosa, argenteo-viridia, infra scarioso-carinata, margine scarioso-serrata, glabra, 1.0-1.5 cm longa, 2 mm lata. Scapi minute nonglanduloso-piliferi, 5-10 cm alti, paniculati laxi subthyrsoidei, pedicelli bracteis lanceolato-linearibus scarioso-marginibus suffulti basi prophyllis 2 similibus minoribus praediti. Calycis tubus elongatus, sensim in pedicellum attenuatus, dense pilis brevissimis nonglandulosis instructus. Calycis lobi dense nonglanduloso-piliferim ca. 2 mm longi, late oblongi obtusi, anteriores 2 fere usque ad apicem, 3 posteriores liberi. Flores verticali orientati. Corollae roseae, lacinae e basi rubromarcatæ, faux flavum. Corollae lacinae ellipticae, 4 mm longae, 2.5-1.7 mm latae. Appendices faucis 4 (usque connati), rotundatae. Labellum orbiculatum, glanduliferum, basi appendiculis lanceolatis instructum. Capsula et semina ignota.

Perennial with short congested nodose branches. Leaves all in basal rosettes, linear, apex with an incurved seta, silvery green, with a scarios ridge below, margins scarios-serrate, glabrous, 1.0-1.5 cm long, 2 mm wide. Inflorescence 5-10 cm tall, covered with minute nonglandular hairs, pedicels subtended by scarios margined linear-lanceolate bracts with pairs of minute paired similar bracteoles below each flower. Ovary elongate, 6-8 mm long, tapering gradually into the pedicel, densely covered with nonglandular hairs, calyx lobes also thus pubescent, 2 anterior lobes united to their tips, 3 posterior ones free. Flowers oriented vertically rather than horizontally (the column thus appears to operate laterally). Corolla pink, lobes marked red at bases, the throat yellow. Corolla lobes elliptic, 4 mm long, 2.5-2.7 mm wide. Throat appendages 4 (two of them closely paired), rounded. Labellum orbicular, with a pair of lanceolate appendages at the base. Capsule and seeds unknown.

Stylidium drummondianum (Fig. 5) belongs to the group of species that includes *S. hispidum* Lindl., *S. miniatum* Mildbraed, *S. piliferum* R. Br., and *S. pubigerum* Sond. From these species, it differs by having nodose stems; leaves hyaline-carinate below; leaf margins minutely serrate; short nonglandular hairs densely covering inflorescences, pedicels, ovaries, and calyx lobes; vertical orientation of flowers (so that the column, instead of working vertically, operates laterally); and three minute rounded throat appendages (one of them bilobed) in the corolla.

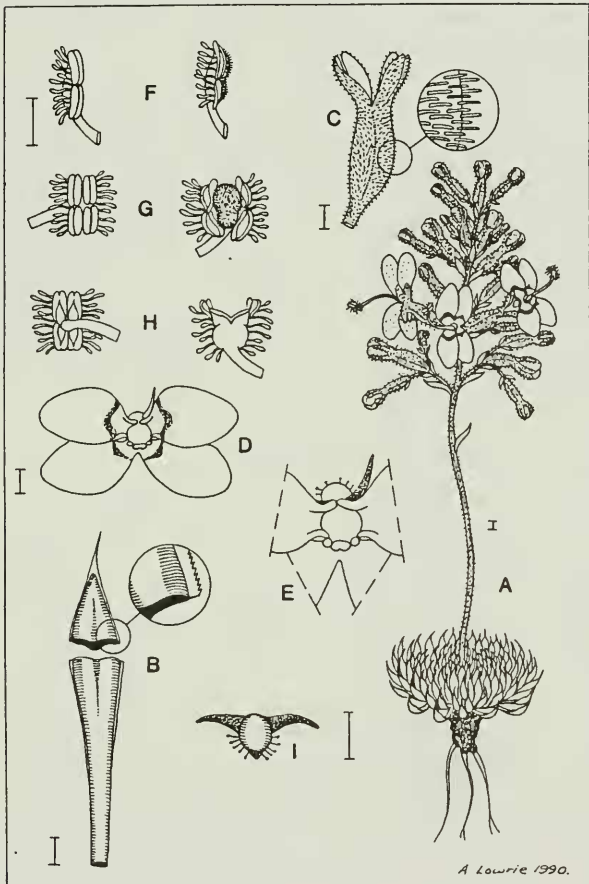


Figure 5. *Stylidium drummondianum*. A. Habit of plant. B. Leaf from basal rosette, with enlarged portion. C. Ovary and calyx lobes, with enlarged portion. D. Face view of corolla. E. Throat of corolla, to show appendages and labellum. F. Lateral view of column tip (with stigma grown out, right). G. Face view of column tip (with stigma grown out, right). H. Back of column tip (stigmatic stage, right). I. Labellum. Scale = 1 mm.

Styloidium keigheryi A. Lowrie & S. Carlquist, *spec. nov.* HOLOTYPE: In acid black peaty sand overlying rock, on the summit of Bluff Knoll, Stirling Range National Park, Western Australia, 28 February 1986, *Gregory Keighery 7958* (PERTH). Isotype: RSA.

Perennis praeter inflorescentiam glabra caulescens. Innovationes erectae, ad basi nodosae, teretes, sparse et subverticillati-foliatae. Folia atro-olivacea, subcoriacea, minute papillata, glabra, lanceolata, mucronata, epetiolata, circa 5 mm long, 1 mm lata. Flores in cymum glabrum. Pedunculus uniflorus bibracteolatis, tenuis, teres, ad 3 cm longus. Pedicelli sparse glandulosi. Calycis tubus obovato-turbinatus quam lobi lanceolati-obtusiusculi vix 2 mm longi paulo brevior. Corolla roseo-purpurea, lacinae obovatae-oblongae, 3 mm longae, 1.7-2.3 mm latae. Faucis appendices filiformes, apice capitatae, manifeste breviter pubescentes. Labellum breve exappendiculatum acuminatum. Capsula et semina ignota.

Perennial with stems up to inflorescences glabrous. Innovations erect, nodose at ground level, slender and terete, with scattered verticils of leaves. Leaves deep olive colored, subcoriaceous, glabrous but with papillate epidermal cells, lanceolate and mucronate, sessile, about 5 mm long and 1 mm wide. Flowers disposed in a lax glabrous cyme. Peduncles one flowered and bibracteolate, slender, up to 3 cm long. Pedicels sparsely glandular. Ovary ovate-turbinate, a little shorter than the calyx lobes, which are up to 2 mm long, lanceolate, and obtuse. Corolla red-purple, lobes obovate-oblong, 3 mm long, 1.7-2.3 mm wide. Throat appendages filiform, capitate, shortly pubescent. Labellum with short appendages, acuminate. Capsule not seen.

Styloidium keigheryi (Fig. 6) is a distinctive species that may have escaped notice because its locality is the highest point in southwestern Australia, and thus this species flowers later than other *Styloidium* species. The species most similar to *Styloidium keigheryi* is *S. pritzelianum* Mildbraed; it has the following features that differ from those of *S. pritzelianum* (*Carlquist 4048* [PERTH, RSA]), contrasting features of the latter in parentheses: stems with swollen nodes near bases (nodes slightly swollen); stems terete (hyaline winged); leaves deep green (light green); leaves minutely papillate (with epidermal cells flat), lanceolate, not tapering into a petiole; peduncles one flowered (one or two flowered), long; labellum with two minute appendages (no appendages).

Styloidium mimeticum A. Lowrie & S. Carlquist, *spec. nov.* HOLOTYPE: In sand, along Great Northern Highway north of Bullsbrook, 1 km south of Wandena Road (south end) on east side of the Highway, 3 December 1989, *Allen Lowrie 243* (PERTH). Isotype: RSA.

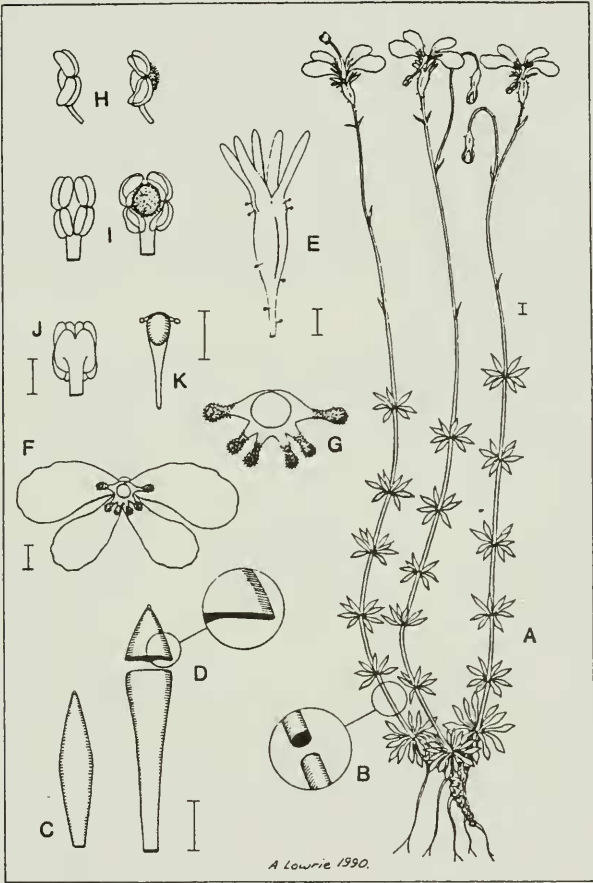


Figure 6. *Stylidium keigheryi*. A. Habit of plant. B. Portion of stem, enlarged. C. Leaf from whorl on inflorescence axis. D. Leaf from basal rosette. E. Ovary and calyx lobes. F. Face view of corolla. G. Throat appendages, enlarged. H. Lateral view of column tip (with stigma grown out, right). I. Face view of column tip (with stigma grown out, right). J. Back of column tip. K. Labellum. Scale = 1 mm.

Annua pilis glanduliferis adpersa imprimis in inflorescentia. Folia radicalia glabra elliptica, plana, 5 mm longa, 2 mm lata, in petioli subaequilongum vel brevem attenuata. Scapi solitarii corymbum laxiflorum pauciflorum gerentes, 5-6 cm alti. Flores longipedicellati, satis conspicui. Calycis tubus subglobosus, 2 mm longus et latus, lobi 1 mm longi, subaequales. Corollae tubus perbrevis, laciniae inaequales, posteriores 2 cuneatae, breve tridentatae, 4 mm longae, anteriores 2 panduriformes, 3.5 mm longae. Corollae laciniae ad apice roseae, roseomaculatae, ad basi albae. Appendices faucis 0. Labellum oblongum, 1.5 mm longum, 0.6 mm latum, bidentatum. Columna submedio geniculata, geniculo processu retrorsum et adpressum acuminatum instructa. Stigma barbatum inter antheras. Capsula ovato-globosa, 1.5 mm longa. Semina ignota.

Annual with glandular hairs scattered primarily in the inflorescence. Leaves in a basal rosette, glabrous, elliptical, flat, 5 mm long, 2 mm wide, narrowed into a petiole as long as the lamina, which is 2.5 mm. Inflorescence solitary, a few flowered lax corymb, 5-6 cm tall. Flowers long pedicellate, rather conspicuous. Ovary subglobose, 2 mm in diameter. Corolla tube very short. Corolla lobes unequal, the posterior 2 cuneate, shortly tridentate, 4 mm long, the anterior 2 panduriform, 3.5 mm long. Corolla lobes pink at tips, white at bases, marked red between. Throat appendages lacking. Labellum elliptical, 1.5 mm long, 0.6 mm wide, bidentate. Column bent near the middle, provided with a retrorse acuminate appressed appendage. Stigma barbate, among the anthers. Capsule subglobose, 2 mm long. Seeds unknown.

Stylidium mimeticum (Fig. 7) is closely related to *S. calcaratum* R. Br. and the two species recently segregated from *S. calcaratum*, *S. ecorne* Farrell & James, and *S. edentatum* Carlquist & Lowrie. From these species, *S. mimeticum* differs by its floral corolla shape; corolla color pattern (which appears to mimic that of *S. utricularioides* Benth., with which it grows); its labellum shape and outline; and its column appendage. Illustrations of the three species with which *S. mimeticum* is compared here are offered by Carlquist & Lowrie (1989). The possibility that flowers of a *Stylidium* might mimic flowers of another plant was examined earlier (Carlquist 1979).

Stylidium diuroides Lindl. subsp. *paucifoliatum* A. Lowrie & S. Carlquist, *subspec. nov.* HOLOTYPE: In white silica sand, along the N side of railway line, on Midlands Road W of Mingenew, 15.6 km E of the Brand Highway Junction, Western Australia, 23 September 1990, *Allen Lowrie 240* (PERTH). Isotype: RSA.

Ab species differt: Herba paucifoliata, folia glabra et nonpapilata; scapi teres, persaepe 2 verticillis bracteis instructi; calycis lobi glabri sed ad margine glandulosi; calycis tubus dense glandulosus.

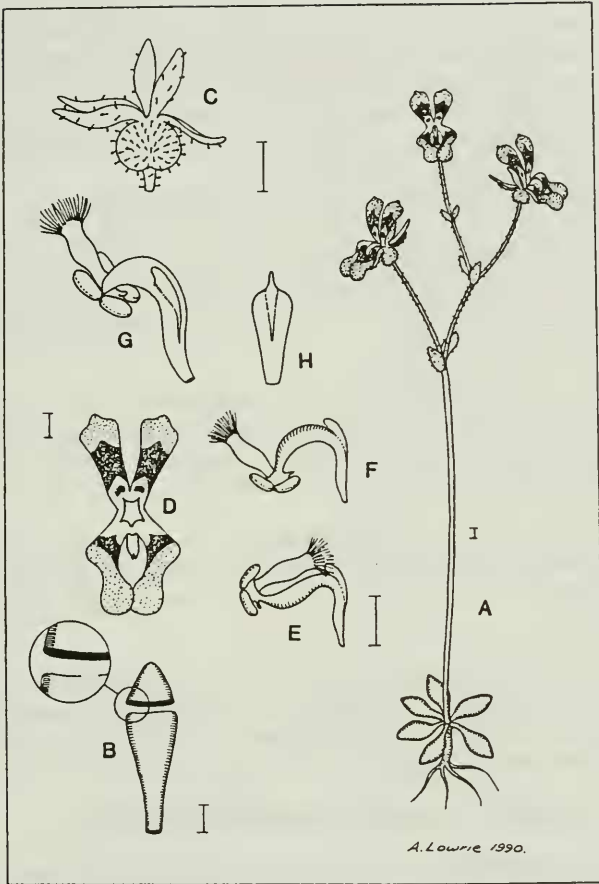


Figure 7. *Stylidium mimeticum*. A. Habit of plant. B. Leaf, with enlarged portion. C. Ovary and calyx lobes. D. Face view of corolla. E. Lateral view of column, triggered. F. Lateral view of column, reset. G. Oblique view of column, not yet triggered. H. Dorsiventral view of column, showing retrorse tooth. Scale = 1 mm.

This new subspecies (Fig. 8) differs from *Stylidium diuroides* subsp. *diuroides* (Fig. 9) (features of which are cited in parentheses below), in having a sparsely leaved rosette, with the leaf surface smooth (rather than densely papillate when viewed with magnification); a usually two whorled scape (rather than a one whorled scape); a terete inflorescence axis (rather than an axis quadrangular or with more than four sides); glabrous calyx lobes, but with glandular margins (rather than completely glabrous); and densely glandular ovaries (rather than sparsely glandular).

This is the plant noted by Erickson (1958, p. 135) when she says, "Material from Mt. Lesueur is sparsely leaved, 2-whorled, and with calyx lobes twice as long as the tube, very glandular hairy." A few single whorled specimens can, however, be found in any given population, and calyx lobes twice as long as the ovary can also be found in subsp. *diuroides*. Erickson has accurately cited the other differences, however.

Stylidium emarginatum Sond. subsp. *exappendiculatum* A. Lowrie & S. Carlquist, *subspec. nov.* HOLOTYPE: in clayey sand near the Beaufort River Bridge on the Perth-Albany Highway, Western Australia, 22 September 1989, *Allen Lowrie 244* (PERTH). Isotype: RSA.

Ab species differt: folia linearia, circa 17 mm longa, 1.5 mm lata; bracteis nonverticillatis, lanceolatis; calycis lobi ovati et obtusi; appendices faucis nullae; labellum curtum, 1.5 mm longum, obtusum.

This new subspecies (Fig. 10) differs from subsp. *emarginatum* (Fig. 11) by having leaves linear, about 17 mm long and 1.5 mm wide; inflorescence bracts lanceolate, not in a verticil; calyx lobes ovate and obtuse; throat appendages absent; labellum short, 1.5 mm long, obtuse.

REDISCOVERIES AND RANGE EXTENSIONS

Stylidium articulatum R. Br. This striking species (Fig. 12) was collected by Robert Brown and by James Drummond (Mildbraed 1907) but has not been collected since, and neither of those collectors give locality data. The reason it has escaped notice is that this plant grows on the (shady) south sides of granite marine bluffs. Many individuals occur in shallow caves where they receive no direct sunlight at all. The specimen illustrated in Fig. 12 came from Mermaid Point, on the Albany Coast, and was collected on 7 December 1989 (*Allen Lowrie 245* [PERTH, RSA]).

Stylidium longitubum Benth. Only a single individual of this species has hitherto been seen since the type collection. A photograph of that individual (Carlquist 1969) shows that the floral shape and patterns are not like those illustrated by Erickson (1958), who evidently illustrated *S. utricularioides* by

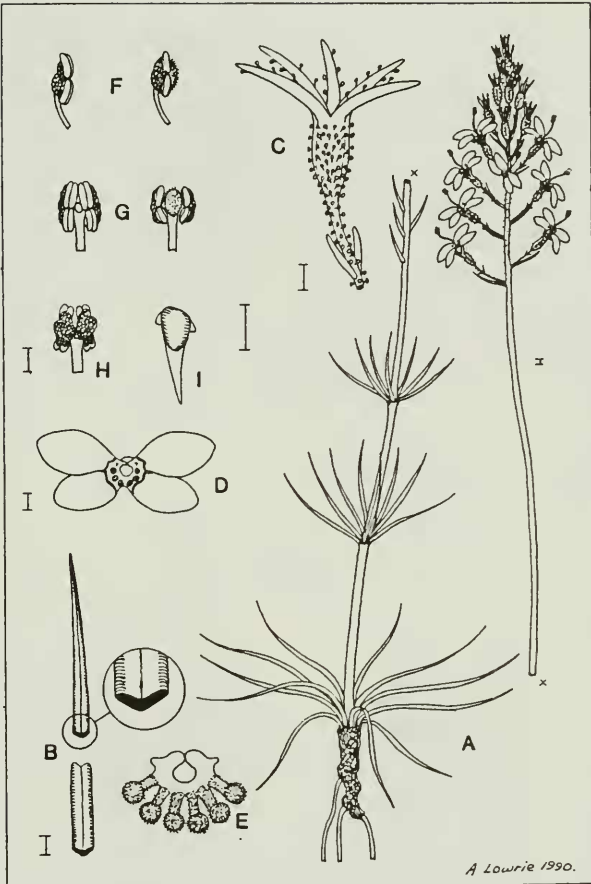


Figure 8. *Stylidium diuroides* subsp. *paucifoliatum*. A. Habit of plant. B. Leaf, with enlarged portion. C. Pedicel, ovary, and calyx lobes. D. Face view of corolla. E. Throat appendages, enlarged. F. Lateral view of column tip (with stigma grown out, right). G. Face view of column tip (with stigma grown out, right). H. Back of column tip. I. Labellum. Scale = 1 mm.

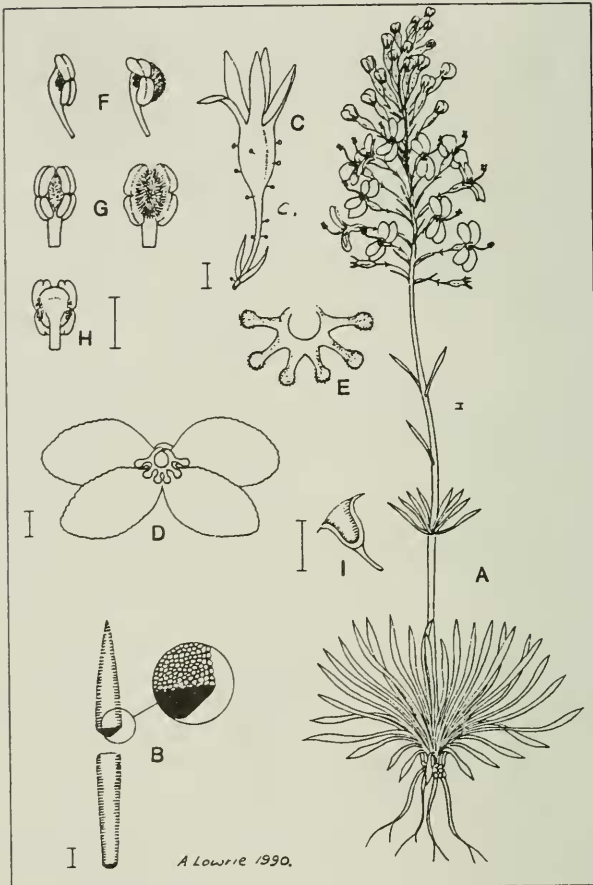


Figure 9. *Styldium diuroides* subsp. *diuroides*. A. Habit of plant. B. Leaf, with enlarged portion. C. Pedicel, ovary, and calyx lobes. D. Face view of corolla. E. Throat appendages, enlarged. F. Lateral view of column tip (with stigma at right). G. Face view of column tip (with stigma grown out, right). H. Back of column tip. I. Labellum. Scale = 1 mm.

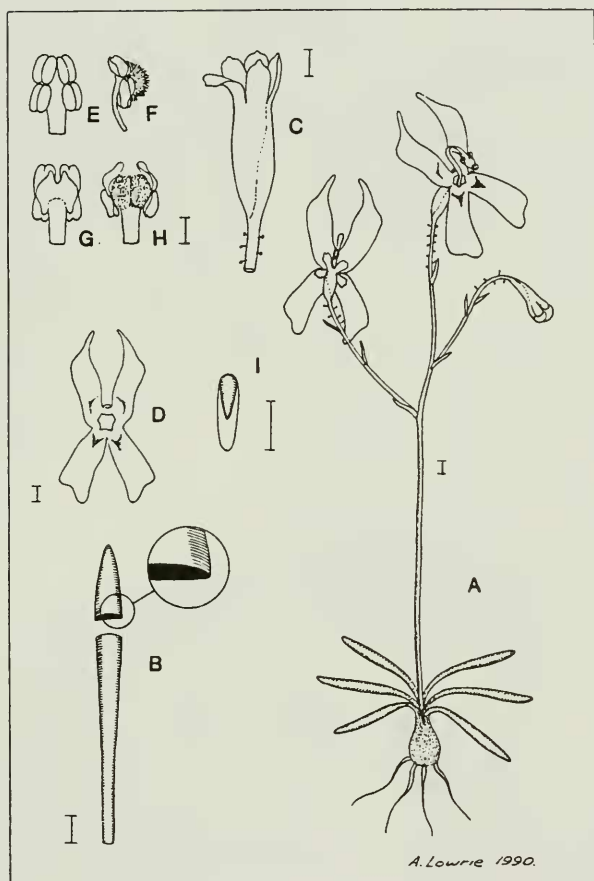


Figure 10. *Stylidium emarginatum* subsp. *exappendiculatum*. A. Habit of plant. B. Leaf, with enlarged portion. C. Ovary and calyx lobes. D. Face view of corolla. E. Face view of column tip. F. Lateral view of column tip with stigma grown out. G. Back of column tip. H. Face view of column tip with stigma grown out. I. Labellum. Scale = 1 mm.

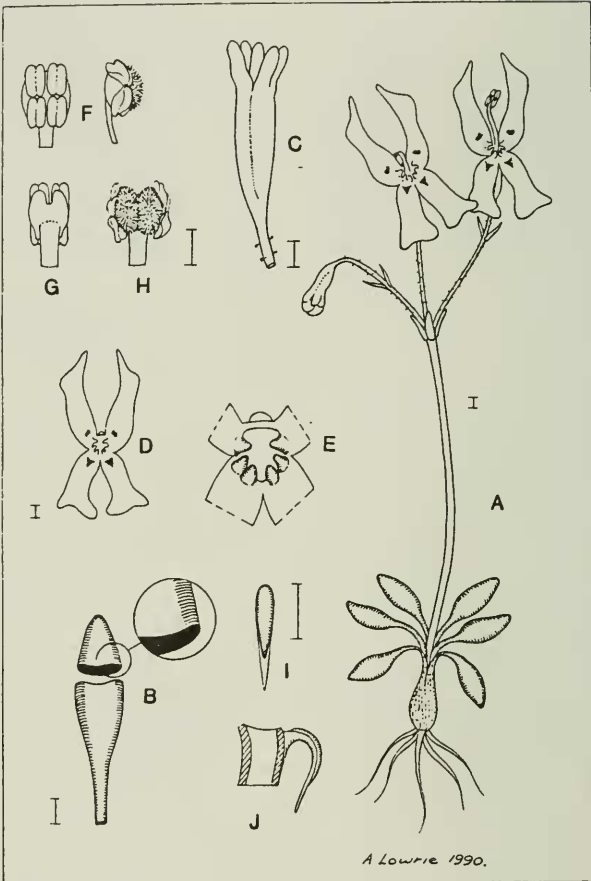


Figure 11. *Styliidium emarginatum* subsp. *emarginatum*. A. Habit of plant. B. Leaf, with enlarged portion. C. Ovary and calyx lobes. D. Face view of corolla. E. Throat of corolla to show appendages. F. Column tip (face view left, lateral view with stigma grown out at right). G. Back of column tip. H. Face view of column tip with stigma grown out. I. Labellum. J. Longitudinal section of corolla tube, showing labellum. Scale = 1 mm.

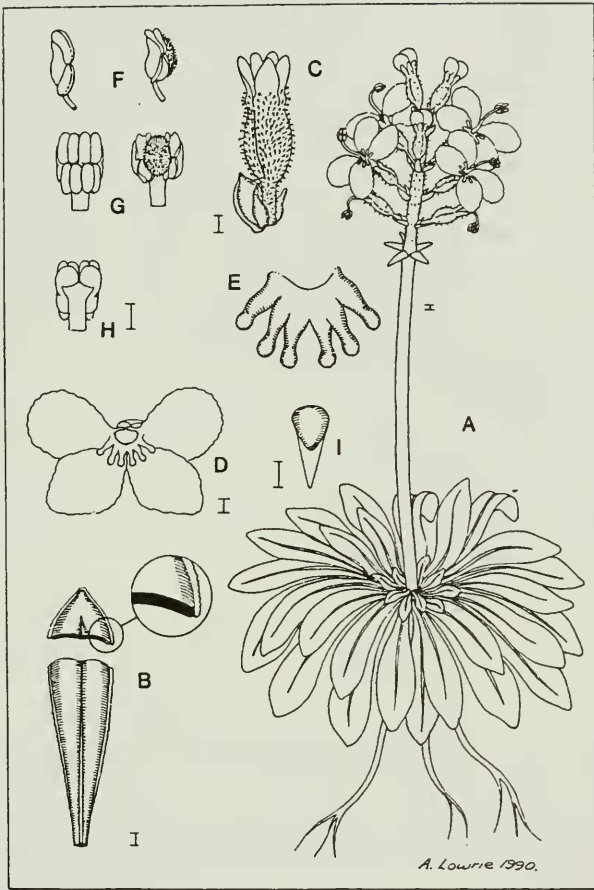


Figure 12. *Styliidium articulatum*. A. Habit of plant. B. Leaf, with enlarged portion. C. Pedicel, bract, bracteoles, ovary, and calyx lobes. D. Face view of corolla. E. Throat appendages, enlarged. F. Lateral view of column tip (with stigma grown out, right). G. Face view of column tip (with stigma grown out, right). H. Back of column tip. I. Labellum. Scale = 1 mm.

mistake for this species. Although Mildbraed (1907) relegated *S. longitubum* to *S. utricularioides*, it is quite distinct. Numerous individuals were found in a locality not far from the locality reported by Carlquist (1969). These were found in a paddock on the west side of Railway Parade, 0.5 km north of Apple Road, Upper Swan, and were collected on 12 November 1989 (*Allen Lowrie 246* [PERTH, RSA]).

Stylidium pseudohirsutum Mildbraed. This species, described from a Drummond specimen lacking locality data, was collected near Needilup (Carlquist 1966). The species can now also be reported from the Beaufort River Bridge Reserve south of Williams, on the Perth-Albany Highway, where it was collected on 19 November 1989 (*Allen Lowrie 247* [PERTH, RSA]).

Stylidium pygmaeum R. Br. and *S. ezoglossum* Erickson & Willis. *Stylidium pygmaeum* (Fig. 13) has not been reported in this century. Individuals agreeing in all details (such as presence of the labellum on the outer surface of the corolla tube) with the type were collected on the upper Hay River on 7 December 1989 (*Allen Lowrie 248* [PERTH, RSA]) and also 20 km west of Albany on 5 December 1989 (*Allen Lowrie 249* [PERTH]). These individuals are from much the same region and season as those named by Erickson & Willis (1955) as *S. ezoglossum* Erickson & Willis. Evidently Erickson (1958) thought that the type specimen of *S. pygmaeum* had merely "purple spots" at the corolla throat, and the individuals named as *S. ezoglossum* by Erickson & Willis (1955) are in all respects referable to *S. pygmaeum*. *Stylidium ezoglossum* thus must be reduced to synonymy under *S. pygmaeum*.

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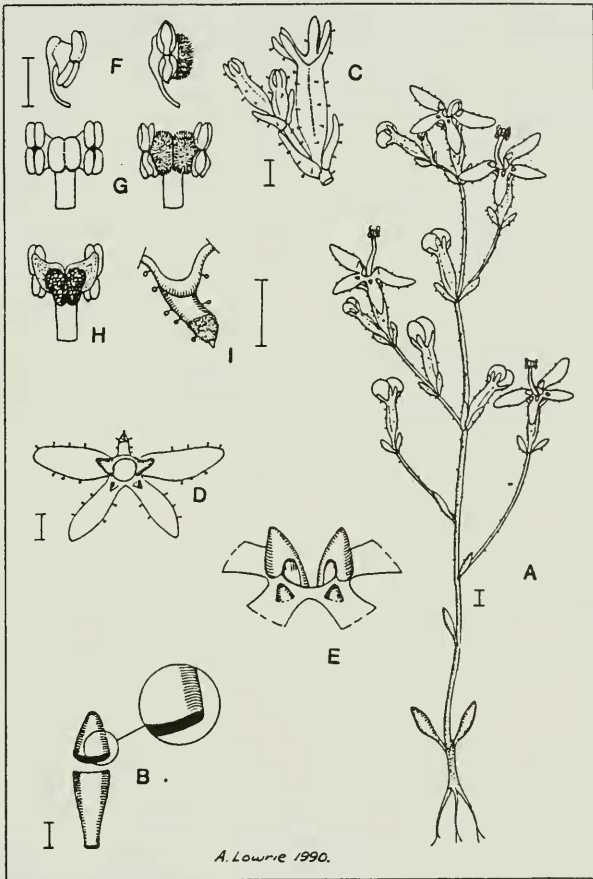


Figure 13. *Stylidium pygmaeum*. A. Habit of robust plant. B. Leaf, with enlarged portion. C. Pedicel and bracts with buds, bracteoles, ovary, and calyx lobes. D. Face view of corolla. E. Throat of corolla, showing appendages, enlarged. F. Lateral view of column tip (with stigma grown out, right). G. Face view of column tip (with stigma grown out, right). H. Back of column tip. I. Labellum. Scale = 1 mm.

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